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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/320,950	05/27/1999	JOHN N. GLOVER	105218-000004/US/2	5662
70155	7590	11/26/2010	EXAMINER	
GREENBERG TRAURIG (HOU)			SORKIN, DAVID L	
INTELLECTUAL PROPERTY DEPARTMENT				
1000 Louisiana Street			ART UNIT	
Suite 1700			PAPER NUMBER	
Houston, TX 77002			1774	
			NOTIFICATION DATE	
			DELIVERY MODE	
			11/26/2010	
			ELECTRONIC	

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/320,950  
Filing Date: May 27, 1999  
Appellant(s): GLOVER, JOHN N.

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Mark G. Chretien  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 09 September 2010 and amended 29 September 2010 appealing from the Office action mailed 10 August 2009.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

59, 61-67 and 69-95

**(4) Status of Amendments After Final**

No proposed amendment was filed after the final rejection from which the appeal is taken.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken is being maintained by the examiner.

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

US 4,615,796	Kramer	10-1986
DE 35 39 195	Hung et al.	05-1986

Fulton, "CE Refresher, Catalyst Engineering, part 2: Selecting the catalyst configuration", Chemical Engineering, 12 May 1986, pages 97-101.

Fay, "A three-point generalization of the ellipse", International Journal of Mathematical Education in Science and Technology, January 2002, volume 33, issue 1, pages 111-123.

Peterson, "Beyond the Ellipse", September 1996, Mathematics Association of America Online.

**(9) Grounds of Rejection**

The following grounds of rejection are applicable to the appealed claims:

**Claims 82-88 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement:**

Regarding claims 82-85, the originally filed application makes no distinction between "sharp" corners and other corners. There is no description of corners being "sharp".

Regarding claims 86-88, the combination of "a central opening extending through the body, and at least three trisoid-shaped openings extending through the body and

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positioned between the central opening and an outer periphery of the body” was not described in the originally filed application.

**Claims 59, 61-67, 69-85, 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (US 4,615,796) in view of “CE Refresher: Catalyst Engineering, Part 2” by John Fulton (“Fulton” herein).** Regarding claims 59, 78, and 94 Kramer ('796) discloses a method of fluid distribution in a chemical reactor comprising the steps of providing a layer of a plurality of ceramic filter units (see col. 3, lines 34-40; Figs. 1 and 2); contacting an organic based stream with the layer of the plurality of ceramic filter units and passing the organic-based stream through the layer prior to the organic based feed stream contacting a catalyst be in the chemical reactor (see col. 2, lines 20-25; Figs. 1 and 2). Kramer ('796) fails to disclose the units having 3 or more passages surrounding a central passage, through which fluid flows (although annular units, including ones with passages are disclosed in Table 1). Fulton teaches cylindrical units having a central opening and four circular/elliptical openings between the central opening and the periphery (see Fig. 1, third column, fifth row). Note: it is considered that the broadest reasonable definition of ellipse includes circles; just as squares are a special type of rectangle, circles are a special type of ellipse. It is considered that it would have been obvious to one of ordinary skill in the art to have shaped the units of Kramer according to the teachings of Fulton, because Kramer explains that alternative unit shapes may be used in the disclosed processes (see Table 2 and col. 4, lines 1-4). Furthermore, Fulton teaches the above-mentioned shape as an alternative to other shapes including spheres (see page 97) and explains that passages

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in the units can significantly reduce the amount of material needed, while minimizing lose of strength (see pages 97 and 98, Fig. 3). See also the admitted prior art of page 3, lines 7-18 of the instant specification. Regarding claim 61, Kramer ('796) further discloses removing contaminants from a contaminated stream; and providing the contaminated stream to a catalyst bed for further processing in the chemical reactor (see col. 1, lines 52-60; col. 3, lines 4-22; Figs. 1 and 2). Regarding claims 62 and 63, because "packing factor" can be set to any value for a given shape unit merely by varying the size of the unit, and Kramer ('796) explains that unit size should be selected to according to an expected particle size to be filtered out, it is considered that it would have been obvious to one of ordinary skill in the art to have optimized the packing factor to suit a particular expected contaminate particle size. Further regarding claim 63, Kramer ('796) discloses packing the ceramic filter units in graduated layers into the chemical reactor with each layer having a different packing factor (see examples 1-3). Regarding claim 64, Fulton further teaches units may have a fluted outer periphery (see Fig. 1). Regarding claim 65, Fulton further teaches that units may have a plurality of recessed notches extending inwardly from the outer periphery toward the medial portion of the units (see Fig. 1). Regarding claim 66, in the units taught by Fulton the four openings substantially surround the central opening between the central opening and the outer periphery to thereby define a ring around the central opening (see Fig. 1). Regarding claim 67, Kramer ('796) discloses a method of fluid distribution in a chemical reactor comprising the steps of providing a layer of a plurality of ceramic filter units (see col. 3, lines 34-40; Figs. 1 and 2); contacting an organic based stream with the layer of

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the plurality of ceramic filter units and passing the organic-based stream through the layer prior to the organic based feed stream contacting a catalyst be in the chemical reactor (see col. 2, lines 20-25; Figs. 1 and 2). Kramer ('796) fails to disclose the polygonal units having 3 or more passages surrounding a central passage, through which fluid flows. Fulton teaches units having a central opening and four circular/elliptical openings between the central opening and the periphery (see Fig. 1, third column, fifth row). Note: it is considered that the broadest reasonable definition of ellipse includes circles; just as squares are a special type of rectangle, circles are a special type of ellipse. Polygonal units are also taught (see Fig. 1). It is considered that it would have been obvious to one of ordinary skill in the art to have shaped the units of Kramer according to the teachings of Fulton, because Kramer ('796) explains that alternative unit shapes may be used in the disclosed processes (see Table 2 and col. 4, lines 1-4). Furthermore, Fulton teaches the above-mentioned shapes as an alternative to other shapes including spheres (see page 97) and explains that passages in the units can significantly reduce the amount of material needed, while minimizing loss of strength (see pages 97 and 98, Fig. 3). Fulton also notes in the caption of Fig. 1, that the shapes "represent only a few of the almost limitless variety possible". Regarding claim 69, Kramer ('796) further discloses removing contaminants from a contaminated stream; and providing the contaminated stream to a catalyst bed for further processing in the chemical reactor (see col. 1, lines 52-60; col. 3, lines 4-22; Figs. 1 and 2). Regarding claims 70 and 76, Fulton further teaches that units may have a plurality of recessed notches extending inwardly from the outer periphery toward the medial portion

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of the units (see Fig. 1). Regarding claim 71-75, square and rectangular shapes are disclosed in Fig. 1 of Fulton. It is explained that the size of the units should be selected based upon various economic trade-offs (see pages 98-99). Kramer provides examples of unit sizes being 0.5 inches and other sizes within the claimed ranges (see example 1-3). Also see applicant's admission on page 3, lines 7-10 regarding prior art thickness of "3/8 inch" and "approximately 1/8 inch to 1 1/4 inches in diameter". Regarding claim 77, in the units taught by Fulton the four openings substantially surround the central opening between the central opening and the outer periphery to thereby define a ring around the central opening (see Fig. 1). Regarding claims 79-81, the central opening taught by Fulton is circular (see Fig. 1, third column, fifth row). While the other openings are also circular, there is only a mathematically infinitesimal difference between a circle and a non-circular ellipse. As explained by the Senate upon enacting the 1952 Patent Act in Senate Report No. 1979, 82d Cong., 2d Sess. (1952), "Section 103, for the first time in our statute, provides a condition which exists in the law and has existed for more than 100 years, but only by reason of decisions of the courts. An invention which has been made, and which is new in the sense that the same thing has not been made before, may still not be patentable if the difference between the new thing and what was known before is not considered sufficiently great to warrant a patent." The mathematically infinitesimal difference between a circle and a non-circular ellipse "is not considered sufficiently great to warrant a patent". Regarding claims 82-85, Fulton further teaches units with sharp edges as an alternative to units without sharp edges



(see Fig. 1). Regarding claim 95, see *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) regarding the obviousness of duplicating parts.

**Claims 59, 61-67, 69-85, 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer ('796) in view of Fulton as applied to claims 59, 61-67 and 69-85 above, and further in view of Hung et al. (DE 3,539,195).** While it is considered that the broadest reasonable definition of ellipse includes circles, as discussed above, to the extent that someone would argue that circles are excluded from the set of ellipses, Hung et al. (DE 3,539,195) is relied upon as establishing the art recognized equivalence of circular and elliptical openings in ceramic units. As explained in pages 8-10, especially lines 6 and 7 of page 9, of the English translation of Hung ('195), elliptical openings are recognized as an alternative to circular openings. It is considered that it would have been obvious to one of ordinary skill in the art to have substituted elliptical holes for the circular holes discussed above, because circular holes and elliptical holes are recognized in the art as alternative for the same purpose according to Hung ('195) pages 8-10, especially lines 6 and 7 of page 9. Regarding claim 95, see *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) regarding the obviousness of duplicating parts.

**Claims 59, 61-67, 69-85, 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (US 4,615,796) in view of Fulton and further in view of the admitted prior art of applicant's declaration filed 28 February 2008, which relates to the BT-750.** While, as set forth above, it is considered that the claims are obvious over Kramer (US 4,615,796) in view of Fulton alone, the admitted prior art

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evidences that it was known in the art to include at least four non-circular ellipse shaped openings in a unit, between a central circular opening and a periphery.

**Claims 86-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (US 4,615,796) in view of “CE Refresher: Catalyst Engineering, Part 2” by John Fulton (“Fulton” herein).** Note: the term “trisoid” is understood to be a set of points lying in a plane for each of which the sum of the distances to three given points in said plane is equal to a constant, in accordance with “Beyond the Ellipse” cited by applicant 10 September 2001 and “A three-point generalization of the ellipse”.

Regarding claims 86 and 88-91 Kramer ('796) discloses a method of fluid distribution in a chemical reactor comprising the steps of providing a layer of a plurality of ceramic filter units (see col. 3, lines 34-40; Figs. 1 and 2); contacting an organic based stream with the layer of the plurality of ceramic filter units and passing the organic-based stream through the layer prior to the organic based feed stream contacting a catalyst bed in the chemical reactor (see col. 2, lines 20-25; Figs. 1 and 2). Kramer ('796) fails to disclose the units having 3 or more passages surrounding a central passage, through which fluid flows (although annular units, including ones with passages are disclosed in Table 1). Fulton teaches cylindrical units having a central opening and four circular/trisoidal openings between the central opening and the periphery (see Fig. 1, third column, fifth row). Note: it is considered that the broadest reasonable definition of trisoid includes circles; just as squares are a special type of rectangle, circles are a special type of trisoid. See for example the equation below Fig. 2 of “A three-point generalization of the ellipse”, when  $h$  and  $a$  are zero, the equation is a circle. It is

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considered that it would have been obvious to one of ordinary skill in the art to have shaped the units of Kramer according to the teachings of Fulton, because Kramer explains that alternative unit shapes may be used in the disclosed processes (see Table 2 and col. 4, lines 1-4). Furthermore, Fulton teaches the above-mentioned shape as an alternative to other shapes including spheres (see page 97) and explains that passages in the units can significantly reduce the amount of material needed, while minimizing loss of strength (see pages 97 and 98, Fig. 3). See also the admitted prior art of page 3, lines 7-18 of the instant specification. Regarding claim 87, Kramer ('796) discloses a method of fluid distribution in a chemical reactor comprising the steps of providing a layer of a plurality of ceramic filter units (see col. 3, lines 34-40; Figs. 1 and 2); contacting an organic based stream with the layer of the plurality of ceramic filter units and passing the organic-based stream through the layer prior to the organic based feed stream contacting a catalyst bed in the chemical reactor (see col. 2, lines 20-25; Figs. 1 and 2). Kramer ('796) fails to disclose polygonal units having 3 or more passages surrounding a central passage, through which fluid flows (although ones with passages are disclosed in Table 1). Fulton teaches cylindrical units having a central opening and four circular/trisoidal openings between the central opening and the periphery (see Fig. 1, third column, fifth row). Note: it is considered that the broadest reasonable definition of trisoids includes circles; just as squares are a special type of rectangle, circles are a special type of trisoid. See for example the equation below Fig. 2 of "A three-point generalization of the ellipse", when  $h$  and  $a$  are zero, the equation is a circle. Polygonal units are also taught by Fulton (see Fig. 1). It is considered that it would have been

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obvious to one of ordinary skill in the art to have shaped the units of Kramer according to the teachings of Fulton, because Kramer explains that alternative unit shapes may be used in the disclosed processes (see Table 2 and col. 4, lines 1-4). Furthermore, Fulton teaches the above-mentioned shape as an alternative to other shapes including spheres (see page 97) and explains that passages in the units can significantly reduce the amount of material needed, while minimizing loss of strength (see pages 97 and 98, Fig. 3). Regarding claims 92 and 93, see *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) regarding the obviousness of duplicating parts.

**Claims 86-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (US 4,615,796) in view of Fulton and further in view of the admitted prior art of applicant's declaration filed 28 February 2008, which relates to the BT-750.** While, as set forth, above it is considered that the claims are obvious over Kramer (US 4,615,796) in view of Fulton alone, the admitted prior art evidences that it was known in the art to include at least four trisoid shaped openings in a unit, between a central circular opening and a periphery.

#### **(10) Response to Argument**

##### **Rejection under section 112, 1st paragraph of claims 82-85**

Appellant argues that one can see from the drawings that the corners are "sharp". It should be noted that for claims 82, 83 and 85, only Fig. 5 shows the fluted or notched outer peripheral surface required. While the drawings do show corners, the degree to which the corners are sharp or dull is not reasonably conveyed by the drawings.

**Rejection under section 112, 1st paragraph of claims 86-88**

Appellant argues refers to a sentence in the specification “Trisoidal shaped openings 87 may also be used (FIG. 14)”. However, Fig. 14 teaches away from what is claimed, because it does not have the central opening required by claims 86-88. Claims 86-88 require a central opening and at least three trisoid shaped openings between the outer periphery and the central opening. Nothing in the originally filed application would direct one skilled in the art to make such a unit.

**Rejection of claims 59, 61-67, 69-85, 94 and 95 under section 103 as being obvious over Kramer in view of Fulton**

Contrary to appellant’s remarks, it is inherent that a fluid flowing through a particulate bed is distributed. It is also inherent that in a bed of units having openings, at least some fluid (such as hexane disclosed in col. 7, line 45 of Kramer) will flow through the openings.

Contrary to the brief at page 16, Kramer does disclose units having openings, particularly "rings" as disclosed in Table I.

Fulton does disclose elliptical openings, in that a circle is a special case of ellipse. Original claim 28 of the instant application expressly recognizes that the set of ellipses includes circles. Furthermore, instant claims 79-81 are an admission that ellipses include circles, in accordance with the principal of claim differentiation.

In the claims that specifically exclude circles, the ellipse may still be only infinitesimally different than a circle. For example, if the major axis is only one part in a billion greater than the minor axis, the results are not going to be any different that if it

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were a circle. Appellant's arguments on page 17 of the brief that in specific drawings the ellipses are significantly non-circular do not change the scope of the claims which includes all types of ellipses.

Page 18 of the brief states that fluid distribution is entirely different from filtration. However, the instant specification, in the first sentence of the "Field of Invention" section expressly states "This invention relates to a filtering medium and a method for filtering". Fluid flow through a bed of particulate material provides filtration and fluid distribution. Because Kramer relates to catalytic beds, one of ordinary skill in the art would look to an article such as the Fulton catalyst engineering refresher article. Furthermore, the word "refresher" implies that the information explained by the article is something one of ordinary skill in the art would generally know.

While it is true that Fulton explains a disadvantage of sharp corners, Fulton's express teaching of such units as an alternative to other units in Fig. 1 shows that choosing such a unit would have been obvious to one of ordinary skill in the art despite such a disadvantage.

The discussion of Hung on page 20 of the brief is improper because this part of the brief addresses a rejection that does not rely on Hung.

Statements at page 21 of the brief are inaccurate. Appellant seems to confuse a four peripheral hole unit and a six peripheral hole unit. Contrary to the brief, the record shows that applicant did test a six peripheral hole unit (columns C and D of Table 1 of the February 2005 declaration). The four peripheral cylindrical hole device of Fulton (Fig. 1, column 3, row 5) is what was not tested. A four peripheral hole device was also

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tested (columns F, G, H) and referred to as the invention. Apparently appellant considers that it is only possible to test a four hole device when it is considered the invention, but not when it is prior art. Appellant seems to be arguing that it is impossible to make or use a unit which is with the scope of the claims.

**Rejection of claims 59, 61-67, 69-85, 94 and 95 under section 103 as being obvious over Kramer in view of Fulton as applied to claims 59, 61-67 and 69-85 above, and further in view of Hung et al. (DE 3,539,195).**

Whether circles are or are not elliptical is irrelevant to whether circular openings are art recognized equivalents of elliptical openings. The concept of "art recognized equivalents" is normally only applied to two or more different things.

**Rejection of claims 86-93 under section 103 as being obvious over Kramer in view of Fulton**

Appellant only argues for the patentability of a subset of these claims, claims 86-88.

Circles are a special case of trisoids. See for example the equation below Fig. 2 of "A three-point generalization of the ellipse", when  $h$  and  $a$  are zero, the equation is a circle.

**Rejection of claims 59, 61-67 and 69-95 under section 103 as being unpatentable over Kramer (US 4,615,796) in view of Fulton and further in view of the admitted prior art of applicant's declaration filed 28 February 2008, which relates to the BT-750.**

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The examiner is sympathetic to appellant's position that basically applicant mistakenly admitted that something was prior art. However, the examiner is concerned that the USPTO is required to follow decisions such as *Riverwood Int 'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354, 66 USPQ2d 1331, 1337 (Fed. Cir. 2003) and *Constant v. Advanced Micro-Devices Inc.*, 848 F.2d 1560, 1570, 7 USPQ2d 1057, 1063 (Fed. Cir. 1988) and that admitted prior art can be the basis of a rejection even if it is not prior art under the 102 (a), (b), (d), (e), (f) or (g). In the *Nomiya* decision that appellant cites, the applicant's later statements that previously admitted prior art was not really prior were not accepted by CCPA. The brief's quotation from the *Aktiebolaget* decision is just *Aktiebolaget* quoting the *Nomiya* decision.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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